#### **APPENDIX A.5**

**M&E 2001 TRIAD SAMPLING INFORMATION** 



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August 6, 2001

Mr Joseph Lemay Remedial Project Manager USEPA Region I 1 Congress Street Suite 1100 (HBO) Boston, MA 02114-2023

Subject:

Contract No. 68-W6-0042

Work Assignment No. 004-RICO-0146 Wells G&H - RI/FS Risk Assessment **Triad Field Sampling Information** 

Dear Joe:

Enclosed are the following field information from the Triad Field Sampling Effort of June 2001.

- Sampling Locations Table
- Habitat Assessment Field data sheets (Background Text)
- Low gradient Stream Habitat Assessment Scores (Summary Table)
- Habitat Assessment Field Data sheets and Physical Characterization/Water **Quality Field Data Sheets**
- Field Notes (e-mailed on June 29, 2001 by D. Roberts)
- Station Photographs
- CD ROM of photographs

If you have any questions or comments, or are in need of any additional information, please do not hesitate to contact me (781) 224-6022.

Very truly yours,

METCALF & EDDY, INC.

Delad m Simi-

Deborah M. Simone Project Manager

cc:

D. King, USEPA (letter only)

C. Hagger, M&E (letter only)

G. Bullard, TTNUS

B. Hoskins, Lockheed-Martin

WA#004-RICO-0146

### Wells G&H, Sediment Triad Sampling Locations June 18-27, 2001

TTNUS Sampling Number June 2001	Previous Sample; Number	Location	Habitat Type	Date Sampled	Comment <sup>2</sup>
IPSD-WH07-061801	WH-07 (TT)	23-acre wetland, near well H	wetland	6/18/01	PFO
IPSD-TT2201-061801	SD-22-01(TT)	23-acre wetland, near rifle range	wetland	6/18/01	PFO
IPSD-TT1203-061901	SD-12-03 (M&E)	23-acre wetland	stream	6/19/01	
IPSD-TT2903-061901	SDTT-29-03 (TT)	23-acre wetland	stream	6/19/01	
IPSD-TT1901-061901	SD-19-01 (FW)	23-acre wetland	wetland	6/19/01	PEM
IPSD-TT3302-062001	SDTT-33-02 (TT)	Cranberry Bog	wetland	6/20/01	PEM
IPSD-TT3202-062001	SDTT-32-02 (TT)	Cranberry Bog	wetland	6/20/01	PEM
IPSD-WW06-062101	WW-06 (TT)	23-acre wetland, near Wildwood	wetland	6/21/01	PFO
IPSD-TT1802-062101	SD-18-02 (M&E)	23-acre wetland	stream	6/21/01	
IPSD-TT1002-062201	SD-10-01 (M&E)	North of Salem Street	stream	6/22/01	
IPSD-TT1301-062201	SD-13-01 (FW)	23-acre wetland	wetland	6/22/01	PEM
IPSD-TT3001-062201	SDTT-30-01 (TT)	Cranberry bog	stream	6/22/01	
IPSD-PP03-062501	IP-SD-03 (MC)	Phillips Pond	reference pond	6/25/01	
IPSD-TTSA01-062501	new station	S. Branch Aberjona River, Arcadia Rd.	reference wetland	6/25/01	PFO
IPSD-TTSD01-062501	IP-SD-01 (MC)	S. Branch Aberjona River, Willow St.	reference stream	6/25/01	
IPSD-TT04-062601	IP-SD-04 (MC)	Hall's Brook, Third Road	reference stream	6/26/01	
IPSD-HB00-062601	new station	Hall's Brook, Danforth St.	reference wetland	6/26/01	PEM
IPSD-TT0603-062601	SD-06-03 (M&E)	Judkins Pond	pond	6/26/01	
IPSD-TTUF02-062701	UF-02 (TT)	Upper Forebay, Mystic Lake	pond	6/27/01	
IPSD-TTAO03-062701	AO-03 (TT)	Upper Forebay, Mystic Lake	pond	6/27/01	

TT = Tetra Tech NUS, M&E = Metcalf & Eddy, FW = Foster Wheeler, MC = Menzie Cura PFO - Palustrine forested wetland, PEM - Palustrine emergent wetland

### **WELLS G&H TRIAD SAMPLING**

June 2001

#### Habitat Assessment Field Data Sheets -Low Gradient Stream Forms

Habitat Assessment Field Data Sheets-Low Gradient Stream Forms (HAFDS) were filled out at each station used as a sampling location for the June 2001 sediment triad sampling. In addition, a Physical Characterization/Water Quality Field Data Sheet (PC/WQFDS) and a Sample Log Sheet (TTNUS) were also completed for each station. Filed notes were recorded in the field by D. Roberts and were summarized in Attachment A.

The HAFDS forms were filled out based on consensus of the professional judgement of three biologists. Team members participating included: D. Roberts (M&E), K. O'Neill (TTNUS), and either Bart Hoskins (Lockheed-Martin/ESAT) or Cornell Rosiu (EPA).

To try to achieve consistency in the numeric rankings given (0-20) for each of the 10 habitat parameters, some assumptions or interpretations were applied to the assessments. These assumptions are presented below.

### Habitat Parameters: Habitat Assessment Field Data Sheets -Low Gradient Stream Forms

### 1. Epifaunal Substrate/ Available Cover

It was assumed for this parameter to rank in the optimal (16-20) category, there would be a mix a of substrate types present. In the majority of the depositional stations the substrate was 100% soft muck and the did not show evidence of the substrate being frequently disturbed or removed (marginal, 6-10). IF woody debris or undercut banks were present, the station was rated as higher sub-optimal.

#### 2. Pool Substrate Characterization

The selected stations generally did not have a mixture of substrate materials and were therefore rated as less than optimal (<16). Depending on the presence or absence of root mats and submerged vegetation the stations were rated as marginal (6-10) or sub-optimal (11-16).

#### 3. Pool Variability

The majority of the sampling locations were in areas of consistent depth, and were formed essentially in one small or large pool. Pool variability was consequently ranked consistently marginal (6-10) or poor (1-5), based on the depth of the pools. The parameter was assigned a value of NA (not applicable) in the pond locations.

#### 4. Sediment Deposition

The sample locations were selected to be in areas of higher deposition of fine material. The stations were ranked as poor (0-5) unless deposition of sand was present, and a ranking of marginal (6-10).

#### 5. Channel Flow Status

Since depositional areas and wetland locations were selected, most of the stations had little or no detectable water flow. This parameter was interpreted to mean that channel flow would be poor if water levels were very low and only found in isolated pool in a channel. Since the June sampling was conducted during a period of relatively high water levels, all of the locations had water reaching the base of both lower banks, with a minium of substrate exposed (optimal, 16-20). The ranking for this parameter may vary depending on the season during which the survey was conducted. Slightly lower rankings were given at locations where there was evidence of higher water levels than the existing water elevation at the time of sampling.

#### 6. Channel Alteration

Channel alteration characterized how much the stream reach has been channelized or disrupted. Except in a few areas, such ass the Cranberry Bog and the forebay of Upper Mystic Lake, bank evidence of bank alteration was minimal or absent (Optimal, 16-20). In areas with historic dredging (Cranberry Bog, Phillips Pond, Judkins Pond), a ranking of sub-optimal was applied.

#### 7. Channel Sinuosity

For the stream locations, channel sinuosity was evaluated based on the proportion of bends in the stream in the reach where the sample was taken. This parameter was not easily applied to wetland and pond locations. For the pond locations, values between 0 and 5 were assigned (poor) because all of the ponds represented impoundments in the river. At the wetland locations channel sinuosity only applied to locations where the adjacent channel could be rated. To be consistent, all of the values were converted to N/A (not applicable) because the condition of the adjacent channel was not relevant to habitat at the sampling station in the wetland. This results in essentially assigning the channel sinuosity a value of 0 for the wetland in the over-all score.

#### 8. Bank Stability

Bank stability was generally rated as optimal (9-10) if the banks werer natural and fully vegetated. In areas where human disturbance resulted in small areas of erosion, values of 6-8 (sub-optimal) were assigned.

#### 9. Vegetative Protection

The value of the bank stability was closely related to the bank stability parameter. The majority of the sites had banks that were more than 90% vegetated, with the exception of the pond locations. At the pond locations were vegetation had been removed or mowed, the vegetation protection was rated as sub-optimal or marginal.

#### 10. Riparian Vegetative Zone Width

The riparian vegetative zone width was evaluated as optimal (9-10) if there was an undisturbed buffer of at least 18 m in width. Based on the thresholds in the condition categories, the width of undisturbed buffer was used to evaluate the condition of the riparian zone. Where mowing or pavement came within 6 m of the edge of water, the condition rating of poor was assigned.

### Low Gradient Stream Habitat Assessment Scores for Wells G&H, Woburn, Massachusetts

FOM Gladiett of earth transmission																				
		<del></del>	TT.	TT-	TT- I	TT-	TT-		TT-	TT.	TT-	TT-		TT-	TT-			TT-	TT-	TT-
Station:		TT-	4002	2002	1001	1302	3202	wwoe	1802	1002	1301	3001	PP03	SAOI	SD01	TT04	HB00	0603	UF02	AO03
Station:	WH07	2201	1203	2803	1801	3302	11	13	15	13	13	11	11	13	16	13	15	11	11	11
1. Epifaunal Substrate/ Available Cover	11	12	14	14	14	4.4				14		14	8	10	11	14	10	8	8	8
2. Pool Substrate Characterization		10	12	11		14	12	5		11				5	8	6	3	N/A	N/A	N/A
3. Pool Variability	5	4	0	5								5		5	10	8	5	2	3	3
4. Sediment Deposition		3	5	5		. 8		5						19			20	20	18	18
5. Channel Flow Status	18	16	20			16		17			_		15		18			_		
6. Channel Alteration		20	20	20	_	13					_			N/A	10			7	2	2
7. Channel Sinuosity	N/A	N/A	18	15	N/A	N/A	N/A					15						<del></del>	8	B
8. Bank Stability (Left Bank)		10	10	10	10	9	10				6								8	
Bank Stability (Right Bank)	10	10	10	10	10	9	10				7	9		10						+
9. Vegetative Protection (Left Bank)	9		10	10	10	10	10	10	10	10	9									<del>                                     </del>
Vegetative Protection (Right Bank)	9		10	10	10	10	10	10	10	6	7	10							<del></del>	<del>  '</del>
Vegetauve Protection (Right Bank)	10					10	10	10	10	7	9	6	3		<del></del>					اچــــــــــــــــــــــــــــــــــــ
10. Riparian Vegetative Zone Width (Left Bank	10		+					4	10	6	5 5	10	4	10	9	10	10	1 1	5	
Riparian Vegetative Zone Width (Right Benk)																				
TOTAL 0000	1 422	1 1 26	149	150	137	122	123	128	150	128	108	140	102	126	143	149	133	84	95	93
TOTAL SCORE	127	125	148	130	1137	1 122	120		1				1							

STREAM NAME A WORKING Lives		LOCATION IPSD-WHO7					
STATION # WHOT RIVE	RMILE	STREAM CLASS					
LATLONG	G	RIVER BASIN					
STORET #		AGENCY					
INVESTIGATORS P. do	erstloskin	s O'Neil					
FORM COMPLETED BY	,	DATE 6/15/0 REASON FOR SURVEY					
Roberts		TIME TOO AM TO Triad Sumpling					
WEATHER CONDITIONS	Now	Past 24 Has there been a heavy rain in the last 7 days? hours (AYes (No ~).5" Aa.w					
Light needs	🔾 rain (	(steady rain) Air Temperature					
Sunny		rs (intermittent)					
850	T≱t cle	ear/sunny 🗅					
SITE LOCATION/MAP	Draw a map of the sit	te and indicate the areas sampled (or attach a photograph)					
	wHC	te and indicate the areas sampled (or attach a photograph)  Remitos					
	N2116	- Mes					
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		way.					
	_	1 11 +/ 1 > A+					
	5.	ample skoth +/- 1.2 ft					
		•					
STREAM CHARACTERIZATION	Stream Subsystem O Perennial	intermittent 🗆 Tidal Stream Type 💆 Warmwater					
	Stream Origin	Catchment Areakm²					
	☐ Glacial ☐ Non-glacial monta	☐ Spring-fed ane ☐ Mixture of origins					
	☐ Swamp and bog	Other					

WATERS FEATUR		Predon 24 Fores 1 Field 1 Agric	ninant Surrounding Lar st Comme Pasture O Industri cultural O Other	iduse ercial - fr : ~ c ial	Local Watershed NPS Mo evidence Som Obvious sources	Pollution e potential sources  No evide do in in rediction  O Heavy w/n 100 m			
		Resid			Local Watershed Eros Mone	ion Heavy w/w 100m	(100 m)		
RIPARIA VEGETA (18 meter	TION		e the dominant type and S Int species present			erbaceous (sparse) Zalen Sinsi			
INSTREA FEATUR		Estima Sampli Area in Estima		m 5. f. km²	Canopy Cover Partly Open Partly Open Partly Open Partly Open Partly Open Proportion of Reach R Morphology Types Q Riffle % Q Prool 100 % Channelized Q Yes				
		ļ	Dam Present 🔾 Yes 💢 No						
LARGE V DEBRIS	WOODY	LWD Density		% 60HU n²/km² (LWD/					
AQUATIO VEGETA	OUATIC  EGETATION  Indicate the dominant type and record the dominant species present  Rooted emergent  Rooted floating  Free floating								
		ı		1035)	duckweel .				
	<del></del>	<del></del>	of the reach with aqua	tic vegetation	05 %		1		
WATER QUALITY Temperature 19 Specific Conducta			rature <u>17,03 °</u> C : Conductance <u>294.</u> ed Oxygen <u>3.44</u>	00		age I Chemical I Other			
		рн _6	.95 ORP	-83. MV	Water Surface Oils  Slick Sheen S None Other	Slick Sheen Globs Flecks			
	·····	Turbid WQ In:	strument Used <u>V</u> 5	工					
SEDIME! SUBSTRA		Odors Norm O Chen O Othe	nical Anaerobic	O Petroleum O None	Deposits  O Sludge O Sawdust  Relict shells	Other Osand			
		Qils	nt 🗆 Slight 🗆 Modera	te 🔾 Profu	are the undersides blac	h are not deeply embedded, k in color?			
INC	ORGANIC SUB	STRATE	COMPONENTS		ORGANIC SUBSTRATE C	OMPONENTS			
Substrate Type			% Composition in Sampling Reach	Substrate Type	(does not necessarily add  Characteristic	% Composition in Sampling Area			
Bedrock		()		Detritus	sticks, wood, coarse plant		i I		
Boulder > 256 mm (10")		Ò		materials (CPOM)	80% 20%				
Cobble	64-256 mm (2.5	2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	2.09			
Gravel	2-64 mm (0.1"-	"-2.5") <i>O</i>			(1.1.014)	2010			
Sand		06-2mm (gritty)		Mari	grey, shell fragments				
Silt	0.004-0.06 mm		10090						
Clay	< 0.004 mm (sh	ck)			ł		1		

#### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

Ľ	TRE	EAM NAME Aber	iona River	LOCATION TOS	0-WHU7		
[	STAT	ПОН# <u>WHO</u> 7 Ř	IVERMILE	STREAM CLASS	untrine fores	kd wetland	
Г	_AT	L	ONG	RIVER BASIN			
Γ	STO	RET#		AGENCY			
Г	NVE	STIGATORS HOSK	INS O'NEIL K	2trado			
		M COMPLETED BY	~5/6'No:11	DATE 6 18 0 1 TIME 12:30 AM	REASON FOR SUR		
Γ	Ŧ	Habitat		Condition	Category		
l	-	Parameter	Optimal	Suboptimal	Marginal	Poor	
	- 1	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	substrate not optimal habitat
l	a ch	SCORE	POLICE IS A PROJECT	A SECTION AND A	10u29tn8in174.6	Market State of	
	in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.	pom. Moss
1	5	SCORE 17	20-19-18-17-16	\$15614(13-)2-11-	10 9 8 7 p 6	154 4 -3 2 2 415 0	
	rs to be evaluated	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.	All Shallon pools
١	i i	score 5	201/19 18: 17 16	353 K 33 12 c 11	110 49 78 77 6	(5) Northead No.	'
	Parameters to	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	please 1. Her
١		SCORE .	201105185172716	Charles (States)	2101292 82 18 16	Listan (D) (T) (O	
	-	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	exposed.	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	No flow
١		CODE	20 10 /18 /17 -16	315#445:13: 12:11	310 - 9 - 8 - 7 - 6	1 5 - 4 5 - 3 5 2 - 1 (X	) level

### WH07 - p2

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat		Condition	Category		
1 1	Parameter	Optimal	Suboptimal	Marginal	Роог	
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.	bordering veg. wetto No chann
	SCORE	20 19-41 <b>62</b> 079-169	present.	#10 / / <b>9500 (1.27)</b> = 61	\$-4.75°EVES.07	•
iling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length I to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.	No distinc
E	SCORE	20 21936 Beaution		(10) - 21 × 8 × 12 × 62	1.5 4.73k.251K.Q.	
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of crosion; high erosion potential during floods.	Unstable, many croded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has	No erosis evident
to be evale	SCORE (LB) SCORE (RB)	Len Banks (10) 9). Right Banks (10) 99	+ 1000		erosional scars.	
Parameters	9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	potential plant stubble height remaining.	surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	Shrub +C shrub +C energent layer prose Energent regarda +.C sparse
	score $\frac{q}{q}$ (LB) score $\frac{q}{q}$ (RB)	Commence of the Commence of th				
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.	İ
	SCORE $\cancel{D}$ (LB) SCORE $\cancel{D}$ (RB)	Leff Bank (10) 9			2 2 0	

Total Score 127

STREAM NAME AD	riona files	LOCATION	CPSD-	TT 2001		
STATION #_TT220 \R		STREAM CLA				
LATL(	ONG	RIVER BASIN				
STORET#		AGENCY				
INVESTIGATORS R	oberts to	skins	101	Jei		
FORM COMPLETED BY	· · · · · · · · · · · · · · · · · · ·	DATE 6/18	AM (PI	REASON FOR SURVEY  Triad Sang	ling	
WEATHER CONDITIONS	☐ rain ( ☐ shower:%☐ %c	(heavy rain) steady rain) s (intermittent) loud cover ear/sunny	Past 24 hours	Has there been a heavy rain in the last 7 Payes ONO 7-2.5"  Air Temperature 85° C  Other	days? in past 24	4 h
SITE LOCATION/MAP	7 N -			Poled (or attach a photograph)		
STREAM CHARACTERIZATION	Stream Subsystem O Perennial Int Stream Origin O Glacial O Non-glacial montane O Swamp and bog	ermittent	d of origins	Stream Type O Coldwater  Catchment Areakm1		

WATERSHED FEATURES	Predominant Surrounding Lai  Is Forest Commo    Field/Pasture   Industr    Agricultura  Other    Residential	ercial ial	Local Watershed NPS No evidence Som Obvious sources Local Watershed Eros None Moderate	ne potential sources	de , ,
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and Trees  dominant species present	d record the d		erbaceous Lea, Sturk act	bage
Estimated Reach Length FEATURES  Estimated Stream Width 2:  Sampling Reach Area 16  Area in km² (m²x1000)  Estimated Stream Depth Surface Velocity (at thalweg)		## km² -2 fft	Canopy Cover  Partly open  Partly open  Partly open  Proportion of Reach Prophology Types	to No	
LARGE WOODY DEBRIS	LWDm²  Density of LWDn	259 m³/km² (LWD/	o'	140	
AQUATIC VEGETATION  Indicate the dominant type and record the dominant species present   Rooted emergent   Rooted submergent   Rooted floating   Free floating   Ploating Algae   Attached Algae   Rooted floating   Portion of the reach with aquatic vegetation   %   Veq. by dv. 79					
WATER QUALITY	Temperature 19 50°C	o <sup>D</sup>	Water Odors Sommal/None Sew	Chemical Other	
SEDIMENT/ SUBSTRATE	Odors  SNormal	Petroleum None	Deposits  Sludge Sawdust Relict shells  Looking at stones whic	Paper fiber Sand Other Now @	
	STRATE COMPONENTS and up to 100%)		ORGANIC SUBSTRATE C		
Substrate Diamet	er % Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Boulder > 256 mm (10")		Detritus	sticks, wood, coarse plant materials (CPOM)	80%	
Cobble 64-256 mm (2.5 Gravel 2-64 mm (0.1"-2	2.5")	Muck-Mud	black, very fine organic (FPOM)	80 % 2010	
Sand 0.06-2mm (gritt Silt 0.004-0.06 mm Clay < 0.004 mm (sli	10090	Mari	grey, shell fragments	0	

lead shot in some samples

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAMNAME Aberiena River	LOCATION TROUT 2201				
STATION # 201 RIVERMILE	STREAM CLASS				
LATLONG	RIVER BASIN				
STORET #	AGENCY				
INVESTIGATORS ROBERTS O'N	10:11. HOSKINS				
FORM COMPLETED BY	DATE 16/18/01 REASON FOR SURVEY TIME 3:30 AM PN Triad Sampling				

	Habitat					
	Parameter	Optimal	Suboptimal	Marginal	Poor	
ch	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
	SCORE	potential (i.e., logs/snags that are <u>not</u> new fall and not transient).	yet prepared for colonization (may rate at high end of scale).	10 9 8 2 6	5 4 2 2 2 1 5 0	
g res		Mixture of substrate	Mixture of soft sand, mud,	All mudor clay or sand	Hard-pan clay or bedrock;	- 100
d in samplin	2. Pool Substrate Characterization	materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	or clay; mud may be dominant; some root mats and submerged vegetation present.	bottom; little or no root mat; no submerged vegetation.	no root mat or vegetation.	Lests rosur
uate	SCORE	20 49 18 417 16	15-14, 13 12 -11	10 9 8 7 6	5 4 3 2 1 0	۵. این صف
Parameters to be evaluated in sampling reach	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.	Veg
met.	SCORE	20 - 19% 18 150 10	314-313-12 11	10 9 8 7 6	5 (4)3-2-1-0	_ 1
Param	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development, more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	Low flow Loaf 1. +
	SCORE	DOMESTIC OF THE PARTY OF THE PA	12 12 12 12 11 12 11 12 11 11 11 11 11 1	100 9 8 0 A 6	65-4. <b>(</b> 3)2-1-0	. ^
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.	Slow for Channel Filled
	SCORE	20 19 18 17 (16)	M3#14 13 12 11	×10 - 9 8 - 76	\$5084×3% 2×31×0	

**A**-9

#### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat		Condition	Category	
ı	Parameter	Optimal	Suboptimal	Marginal	Poor
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	SCORE	20 19 184 178 16:	11829 <b>573</b> 12 212 11 V	10: 9 <b>*****</b> 37: 3	3 4 3 251 01
npling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length I to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been 19 channelized for a long distance.
1 320	SCORE	2022192518.174516	A STANTAGE OF	10 (9) F 1 6	5 4 3 20 1 0
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
to be eval	$\frac{\text{SCORE}}{\text{SCORE}} \frac{\cancel{D}}{\cancel{D}} \text{(LB)}$	Left Bank (10) 9. Right Bank (10) 9.	**************************************	5 (1) 4 (5 (1) 5 (2) 4 (6) 1 3 (5	7-2 1 7-0 4 7-2 4 1 1 1 0 1
Parameteri	9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.		Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
	SCORE (LB) SCORE (RB)	Line Line (1) And (1) And (1) And (1)			2 (m. 0-)- #62-70-188-90-5
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
	SCORE $\frac{10}{10}$ (LB)	Left Bank (10) 9	8 7 6	5. 4 3:	2 1 0
]	SCORE [1] (RB)	Right Bank 10 9	8 2 7 7 6	6. 5. S. 14	2 1 0

Total Score 125

STREAM NAME Aburbas KIVOT		LOCATION IS DIFFIGO 3						
STATION # 1203 RI	VERMILE	STREAM CLASS						
LATLO	NG	RIVER BASIN						
STORET #		AGENCY						
INVESTIGATORS A	oberts O'Ne	نال						
FORM COMPLETED BY	<del>/</del>	DATE 6/19/0/ TIME 9:30 (AM) PA	REASON FOR SURVEY					
Koborts		THE 4.30 (AM) PA	Triad sampling					
<u> </u>	<u> </u>							
WEATHER CONDITIONS	Now	Past 24 hours	Has there been a heavy rain in the last 7 days?  Payes ONO 6/17/01 heavy 10.1					
		(heavy rain)	Air Temperature 80°C F					
-	☐ shower	(intermittent)	Other water levels high					
		ar/sunny	<u> </u>					
SITE LOCATION/MAP	Draw a map of the sit	e and indicate the areas sam	pled (or attach a photograph)					
		<u></u>						
	dane	120						
	ya,	•						
	( )	<u>,                                     </u>						
	/ 1							
	1.	Somph	depositional area in					
]	`.		apposition ;~					
		4	cattails.					
		<b>""</b>	cattails adjacent to main channel					
		f = f	main channel					
		Will Phy	raq					
		1	Accel from					
		/ "11.	Access from Rifle longe Kd					
	}	cathi15	Kila is f					
STREAM CHARACTERIZATION	Stream Subsystem	ermittent 🖸 Tidal	Stream Type Cl Coldwater  Warmwater					
	Stream Origin		Catchment Areakm²					
	Glacial Non-glacial montan							
	Swamp and bog	Other						
L	Th							

WATERS FEATURI		□ Residential Local Watershed Erosion			e potential sources Vo evidence localion		
RIPARIA VEGETA (18 meter	N TION buffer)		Indicate the dominant type and record the dominant species present Herbaceous  Grasses  dominant species present  Cattal, 1005e5tr.fe, tassock 5edgl.				
INSTREA FEATURI		Estimat Samplii Area in Estimat	ed Reach Length ed Stream Width 5- ng Reach Area km² (m²x1000) ed Stream Depth Chancel Velocity weg) Low Floot	m²  Sf in/  1-5 m	Canopy Cover Partly open Partly shaded Shaded Open High Water Mark		
LARGE W DEBRIS	VOODY	LWD Density	LWDm² Density of LWD				
AQUATIC VEGETAT		Indicate the dominant type and record the dominant species present Record emergent Rooted submergent Rooted floating Free to Floating Algae Attached Algae  dominant species present Cattail Loosests: ( Portion of the reach with aquatic vegetation 10% we change 1000				□ Free floating	
WATER (	QUALITY	Temper Specific Dissolve pH 1	ature 20.1 ° C Conductance 359.6 ed Oxygen 2.76 14 ty 3.5 NTU ty ment Used YS		Water Odors  Normal/None Sew Petroleum Fishy  Water Surface Oils	age   Chemical   Other	
	SEDIMENT/ SUBSTRATE  Odors Normal Chemical Other Other  Oils W Absent D Slight D Modera			Petroleum None	Looking at stones whic are the undersides blac	Paper fiber Sand Other AS Sand h are not deeply embedded, k ip color?	
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)				ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)			
Substrate Type	Diamete	r	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Bedrock Boulder	> 256 mm (10")		0	Detritus	sticks, wood, coarse plant materials (CPOM)	40	
Cobble Gravel	64-256 mm (2.5 2-64 mm (0.1"-2	"-10")	0	Muck-Mud	black, very fine organic (FPOM)	60	
Sand Silt Clay	0.06-2mm (gritt 0.004-0.06 mm < 0.004 mm (slie	y)	10090	Marl	grey, shell fragments	0	

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME A NOTTONA RIVOT	LOCATIONIED TIZO3
STATION # 12 03 RIVERMILE	STREAM CLASS
LATLONG	RIVER BASIN
STORET#	AGENCY
INVESTIGATORS HOSKINS LIVER	to O'Neil Funcel St.V
FORM COMPLETED BY	DATE 61190 REASON FOR SURVEY

	Habitat		Condition	Category		
	Parameter	Optimal	Suboptimal	Marginal	Poor	
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
15 E	SCORE			2012-944-814- <b>0-7</b> -6		
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.	
uate	SCORE	2021977189077816	和 (市) (市)	710759 & <b>813 78</b> 56	<b>和实现的</b> 。这种原则	
ers to be eval	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.	
met.	SCORE	20,219,716,72,76	<b>制作的第一次</b> 第六12至115	10 2 3 3 3 3	14 46 F 12 C Oc	
Para	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
1	SCORE	20.2619.1184.193716	<b>新疆域的</b> 美域和	AND OF SEPTEMENT	65/44k3.L2890.00	
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	exposed.	Very little water in channel and mostly present as standing pools.	
	SCORE .	120 00 9 18 17 16	11 1 12 1 12 1 1 1 1 1 1 1 1 1 1 1 1 1	\$10 × 9; / -8×c 7:46	baer4763#k2*-il-(£0	

Mods

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat		Condition	Category	
	Parameter	Optimal	Suboptimal	Marginal	Poor
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	SCORE	20 ) 195 182-17-16	1153 14 18 18 19 11 1	10 19 28 27 6	5 4 9 7 7 0
pling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
E	SCORE	20年的位置的中央的	<b>教理40年起读</b> 》	\$1046.954-8*********	15 4 31,22010
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
to be eval	score <u>(D</u> (lb) score <u>(D</u> (rb)	Landing To 10 22 Right Bank 2 (10) 1926		\$25 - 14	the suppression
Parameters t	9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.		surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
	SCORE $\triangle$ (LB) SCORE $\triangle$ (RB)	Livery of the Robert of the Ro			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
	SCORE (LB) SCORE (RB)	Left Bank (10) 9 Right Bank (10) 9	8 7 4 6	5 4 3	2 1 0

STREAM NAME A DO	iona River	LOCATION TO SOT	72903			
STATION # 50 2903 R	IVERMILE	STREAM CLASS				
LATL	ONG	RIVER BASIN				
STORET#		AGENCY				
INVESTIGATORS ()	Neill Robe	rts, Haskins				
FORM COMPLETED BY	5	DATE 6/19/0 (AM)	REASON FOR SURVEY			
WEATHER CONDITIONS	Now Storm	Past 24 hours (heavy rain)	Has there been a heavy rain in the last 7 days?  Ayes No 6/17/01 May 16.0			
-	☐ rain (: ☐ showers %☐ %cl	(intermittent)	Air Temperature 25%			
SITE LOCATION/MAP	Draw a map of the site	e and indicate the areas san	npied (or attach a photograph)			
		1 - North	State 9001			
STREAM CHARACTERIZATION	Stream Subsystem Rerennial   Inte Stream Origin Glacial Non-glacial montane Swamp and bog	ermittent	Stream Type Coldwater Catchment Areakm²			

					·		1
WATERS FEATUR		Fores O Field O Agric	/Pasture Industri	nduse ercial ial	Local Watershed NPS  D No evidence D Som Obvious sources	Poliution te potential sources	
		□ Resid	dential		Local Watershed Eros None O Moderate	ion Heavy	
RIPARIA VEGETA (18 meter	TION	1	Indicate the dominant type and record the dominant species present Herbaceous OGrasses Herbaceous Iominant species present Dutter bush Cattails 100505112 Tussale Sag				] <del>}</del> _
INSTREA FEATUR		Estimated Reach Lengthm Canopy Cover					
LARGE V DEBRIS	WOODY	LWD Density					
AQUATIO VEGETA		Indicate the dominant type and record the dominant species present A Rooted emergent Rooted submergent Rooted floating Free floating    Floating Algae   Attached Algae   Attach					l land
WATER	OUALITY		of the reach with aquai rature <u>23,23</u> ° c	tic vegetation	<u>%</u> 0% :~ €	hannel 100%	along bond
		Specific	ed Oxygen 4.44 p	00 pm	Water Surface Oils Slick Sheen None Other	1 Chemical 1 Other	
			strument Used <u>YS</u> 	J V	Turbidity (if not mease Clear D Slightly tu Opaque D Stained	rbid	
SEDIMEN SUBSTRA		Odors Norm D Chen D Other	T	O Petroleum O None	Looking at stones whice	Paper fiber Sand Other Some	
L			nt 🔾 Slight 🔾 Modera	te O Profu	se O Yes O No	YA	<b> </b> 
INC	ORGANIC SUBS (should a		COMPONENTS 00%)		ORGANIC SUBSTRATE C (does not necessarily add	OMPONENTS up to 100%)	
Substrate Type	Diamete	r	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Bedrock	- 266 (100)		-2	Detritus	sticks, wood, coarse plant materials (CPOM)	779	
Boulder Cobble	> 256 mm (10") 64-256 mm (2.5		<del>                                     </del>	V -1 22 1		300	
Gravel	2-64 mm (0.1"-2			Muck-Mud	black, very fine organic (FPOM)	509	
Sand	0.06-2mm (gritt)		<del>                                      </del>	Marl	grave shall fine	J (//)	
Silt	0.004-0.06 mm	,	10092	141501	grey, shell fragments		
Clav	< 0.004 mm (slice	·k)	<del>/////</del>	i			

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME ADELIUMA KNET	LOCATION IPSOITT 2903
STATION # RIVERMILE	STREAM CLASS
LATLONG	RIVER BASIN
STORET#	AGENCY
INVESTIGATORS RODERTS HISKIN	s. Finkelstein
FORM COMPLETED BY	TIME 1150 AM PM) REASON FOR SURVEY

	Habitat		Condition	Category	
	Parameter	Optimal	Suboptimal	Marginal	Poor
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
£	SCORE	potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	colonization (may rate at high end of scale).	Hos Taris	55-2432b-0
Į į	SCURE				
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
uate	SCORE	201393636437 <b>2</b> 36	12 (11)	10 . 9 8.4 7 6	35 4.3 2 1 0
rs to be eval	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.
E cc	SCORE	20/19/5115117	######################################	10 9 8 7 6	(5) 40 3 7 1 1 0
Para	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools
	5		deposition in pools.	deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	almost absent due to substantial sediment deposition.
	SCORE	20210 / 18 at 18 18	10 E 1 FE 10 E 10 E	097 1300 E	(a) alea, 241.0.
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	exposed.	Very little water in channel and mostly present as standing pools.
	SCORE	20 19 18 47 16	3 14 - 13 12 11	10-19-8-7-6	6 433 2 1成0

Notland Water Level high

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat		Condition	Category	
	Parameter	Optimal	Suboptimal	Marginal	Poor
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	SCORE	20 ) 19 H1856198-18	FIFTH MEMORITOR	10: 01:13.7· 6:	5-4-3-273-0
spiling reach	7. Channel - Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length I to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
1881	SCORE	20 <b>4</b> 0123018843866	<b>建筑大学社会</b>	\$10-29@8#\$7 <sup>15</sup> -6-	5 4 3 2 1 0 <sub>6</sub>
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has
to be evalu	SCORE (LB) SCORE (RB)	Lings (10) Pipelpol (10)			erosional scars.
Parameters	9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
	SCORE $\frac{D}{C}$ (LB) SCORE $\frac{D}{C}$ (RB)	Zanadowa zalowe Ripitatoka kojest	One List Control		
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
	SCORE $\mathcal{L}$ (LB) SCORE $\mathcal{L}$ (RB)	Left Bank (10) 9 Right Banks (410) 9		5 4 3 4 3	2 1 0

Total Score 150

STREAM NAME AND	iona River	LOCATION TPSD - TT1901			
STATION # 50190 R	IVERMILE	STREAM CLASS			
LATL	ONG	_ RIVER BASIN			
STORET#		AGENCY			
INVESTIGATORS (2)	outs o'n	Seill, Ademan			
FORM COMPLETED BY		DATE 6 7 0   REASON FOR SURVEY			
Roberts		Triad Sanoling			
	<del></del>				
WEATHER CONDITIONS	Now	Past 24 Has there been a heavy rain in the last 7 days? hours A Yes No 6/17/0/~5"			
CONDITIONS		···· (10047) ······) · · · · · · · · · · · · · · ·			
-	☐ shower:	vers (intermittent)			
		%cloud cover 0% Other			
SITE LOCATION/MAP	Draw a man of the sit	site and indicate the areas sampled (or attach a photograph)			
SHE LOCATION/MAP	Draw a map or die sit				
		12/10/21/			
-		pronth prognitas			
		Wayn			
	N				
		Vision y 32 pro			
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
		I w stake 5 - Red la			
		V			
		$^{\prime}$ W $^{\prime\prime}$ $^{\prime\prime}$			
İ					
		Jussock V			
		the sed of			
		8			
STREAM CHARACTERIZATION	Stream Subsystem	Intermittent D Tidal Coldwater Warmwater			
	Stream Origin	Catchment Areakm²			
	☐ Glacial ☐ Non-glacial montan				
	C) Swamp and bog	<b>M</b> Other			

WATERS FEATUR		O Agricultural   Other   Local Wate			Local Watershed NPS No evidence Som Obvious sources Local Watershed Eros	(locally)	
RIPARIA VEGETA (18 meter	N TION buffer)		Indicate the dominant type and record the dominant species present Herbaceous  dominant species present better bush tusking solge for the loose state.				
INSTREA FEATURI			ted Reach Length	m		y shaded Open	
		Sampli	ng Reach Area 🌃 💯	SFare	High Water Mark	high for June -	heavy /ain
	-	Area in	km² (m²x1000)	km²	Proportion of Reach R Morphology Types  Riffle %	epresented by Stream	6/17/0
	-	Estima	ted Stream Depth 0.9	3++	Pool / 6 %	J Run%	,
		Surface (at thai		Jsec J	Channelized Yes  Dam Present Yes	XNo XNo	
LARGE V DEBRIS	VOODY	LWD Density	of LWDn	0 % 1 <sup>2</sup> /km² (LWD/	reach area)		
AQUATIO VEGETA	C TION	☐ Floati		tached Algae	3	☐ Free floating	
		domina	nt species present <u> </u>	ssuk god.	ge, lossestrite a	long boiders	
		Portion	of the reach with aquat	ic vegetation .	% L590 in P	100% burda	ng
Specific Conduct			rature_25,83°C : Conductance_397, ed Oxygen_4,90	ρð		age   Chemical   Other	0
		рн_7	PH 7.22  Water Surface Oils  Slick   Sheen   Globs   Flecks				
		1	RP-59,8	<u>I</u>	Turbidity (if not meass  Clear	rred) rbid   Turbid   Other	
SEDIMENT/ SUBSTRATE Odors SNorr Cher		Odors Selviorm Chem Other	al O Sewage sical O Anaerobic	O Petroleum O None	Deposits O Sludge O Sawdust O Relict shells Tron do 0 o 3	O Paper fiber O Sand Other NOW 9	floc
	Other						
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)				ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)			
Substrate Type	Diamet	er	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Bedrock			0	Detritus	sticks, wood, coarse plant materials (CPOM)	1 -9	
	Boulder > 256 mm (10")		0		, , , , , , , , , , , , , , , , , , ,	25/0	`
Cobble	64-256 mm (2.5		0	Muck-Mud	black, very fine organic (FPOM)	75%	
Sand	2-64 mm (0.1"-2		$\mathcal{C}$	Mad		19 70	
Silt	0.06-2mm (gritt 0.004-0.06 mm	"	7009	Mari	grey, shell fragments		
Clay	< 0.004 mm (sli	(k)	10096				
		,		L	L	L	I

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME ALVIDNA RNOT	LOCATION IPSO-TT19 0
STATION # 1961 RIVERMILE	STREAM CLASS
LATLONG	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS O'ND'IL REDEN	5. Adv Man
FORM COMPLETED BY ROBERTS	DATE 1990 REASON FOR SURVEY TIME 2:30 AM PM Triad Sampling

	Habitat		Condition	Category	
	Parameter	Optimal	Suboptimal	Marginal	Poor
	1. Epifaunal Substrate/ Available Cover	Substrate/ epifaunal colonization and		10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
a d	SCORE	20,000,000,000,000	<b>经济的</b> 的自2公司	10_9+; 8++2m-6	diaded line o
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock, no root mat or vegetation.
uated	SCORE	201,191,187,17.16	4 2 13 (12)11	510 9 ∴ 8 ∴ 7± ∴ <b>6</b> :	
rs to be eval	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.
E e e	SCORE	205-19, 187-17 16	300 C 103 12 70 L7	10 9 - 8 22 6	65 Au3 20 17 0
Para	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
1	SCORE	20210 30 8 30 30 30	<b>经验的</b> 经实力通道	110-9-11108-6	(5°)4m315.2m1-0
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	exposed.	
ĺ	SCORE	20) 19- 18-17-16	155 4 13 12 11	10 9 . 8 . 7 . 6	5344-3702-1160

No flow water level high

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat		Condition	Category		
1	Parameter	Optimal	Suboptimal	Marginal	Poor	
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive, embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.	
	SCORE /	20. 19. 18. 17. 16.	STATE OF THE PARTY	10 9 8/17 6	5 4 3 2 1 0	
ling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.	No Listinct Channel
E	SCORE /	20)41922033377916	1159 (14 MO 2 M 1 M 1 M	A01228 8 72 6	5 -4 3 2 1 0	
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.	
to be eva	SCORE $\cancel{D}$ (LB) SCORE $\cancel{D}$ (RB)	Left Bank Rate (1)		を対すれるでは を は の は の は の の の の の の の の の の の の の		
Parameters	9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	Borsiders Vaccions ~ 1009, Emugal K Morger
	SCORE (LB)	Landard Market		<b>20</b> (\$2.745) 314	1 0. 1424 Here 15 (12)	
	SCORE [[] (RB)	Red City		MASS + SALE AND SHA	PART THE CHAPTER OF	
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.	
	$\begin{array}{c} \text{SCORE} \overline{D} \text{ (LB)} \\ \text{SCORE} \overline{D} \text{ (RB)} \end{array}$	Leff Bank (10 9	14 A 4 50	5 4 3 F 5 4 3	2 1 07	4
L	SCOKE ILZ (RB)	Right Bank 10 9	C. S. Date Constitution	Franks and post with the apply	1、公务、人类区型公共等	<u>-</u>

Total Score 137

STREAM NAME A DEN	java Kiner LOCATION CONDONY BAG IPSD-TT3302
STATION # 1133 62RI	
LATLC	NG RIVER BASIN
STORET#	ÂGENCY
investigators ()	Null, Roberts, Hos KINS
FORM COMPLETED BY	DATE 612 OF REASON FOR SURVEY TIME 11:80 AM PM TO I Od Sam ling
WEATHER CONDITIONS	Now Past 24 Has there been a heavy rain in the last 7 days?    Storm (heavy rain)   Air Temperature
	showers (intermittent) Other% %Cloud cover Sclear/sunny
SITE LOCATION/MAP	Draw a map of the site and indicate the areas sampled (or attach a photograph)
	State 33-02  State 33-02  Weatails  Ensphry  Josses Fe  Jussel Side Cham  On bank
STREAM CHARACTERIZATION	Stream Subsystem   Perennial   Intermittent   Tidal   Coldwater   Warmwater

75

WATERSHED FEATURES	Predominant Surrounding La.  Forest Comm Field/Pasture Industr Agricultural Other Residential	nercial No evidence Some potential sources	
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and S	d record the dominant species present	)   January J.
	dominant species present	man soly turner soly losser. lo	Suc not
INSTREAM FEATURES	Estimated Reach Length 4	Canopy Cover Partly shaded Shaded	= silky
	Sampling Reach Area	High Water Mark	L
-	Area in km² (m²x1000)	Proportion of Reach Represented by Stream	
	Estimated Stream Depth 3"-	Riffle % O Run %	j
	Surface Velocity	Vsce Channelized □ Ycs □ No	The same of the sa
LARGE WOODY DEBRIS	LWD 209	bolicks, partially some bolic land	
AQUATIC VEGETATION	Indicate the dominant type and	record the dominant species present protect submergent Rooted floating Free floating	
	dominant species present	isack solve, -	1232 1000
	Portion of the reach with aquati	ic vegetation 20%	
WATER QUALITY	Temperature 33.67°C Specific Conductance 444.0	Water Odors  Normal/None Sewage	
	Dissolved Oxygen 41.55	Petroleum Chemical Fishy Other	
	pH 7, 22 Turbidity 2,4 VTV	Water Surface Oils Office Oils Oshick Oilseen Olobs OFlecks	
	WQ Instrument Used YS 1	Turbidity (if not measured)  Clear   Slightly turbid   Turbid  Opaque   Stained   Other_	
EDIMENT/ UBSTRATE	Odors Normal Sewage C Chemical Anaerobic	Deposits ☐ Studge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ None ☐ Relict shells ☐ Other A/A	
	Oils — Shaph Moderate	<del></del>	
INORGANIC SUE	SSTRATE COMPONENTS		
(Should	add up to 100%)	ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)	

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) Substrate Diameter			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)			
Туре	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Bedrock			Detritus	cticke ward	Damping Area	
Boulder	> 256 mm (10")	0		sticks, wood, coarse plant materials (CPOM)	1 2 40	
Cobble	64-256 mm (2.5"-10")	Ž	Muck-Mud		010	
Gravel	2-64 mm (0.1"-2.5")	3	Muck-Mud	black, very fine organic (FPOM)	(1)	
Sand	0.06-2mm (gritty)	17	24-1		1 600	
	0.004-0.06 mm	35	Mari	grey, shell fragments		
Clay	< 0.004 mm (slick)					

Substide sandier

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME Aberiana River	LOCATION IPSD-TT3302
STATION # 3302 RIVERMILE	STREAM CLASS
LATLONG	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS ROBERTS O'A be	HOSKINS
FORM COMPLETED BY	TIME 11:30 (AM) PM REASON FOR SURVEY

	Habitat		Condition	Category	
1 1	Parameter	Optimal	Suboptimal	Marginal	Poor
	1. Epifauna <u>l</u> Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking
ach .	SCORE	20 6519 188 178 16	A 2014 (11)	.10 9 8 7 7 6	5 4 3 2- F 0
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
atec	SCORE	20 19 18 17 16	#15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0
rs to be evalu	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.
e e	SCORE	20 19 18 17 16	215-514-13/12:11	10 91 8 7 6	.5 4 3(2)1 0
Para	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions,	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently, pools almost absent due to
	5			constrictions, and bends; moderate deposition of pools prevalent.	substantial sediment deposition.
	SCORE	202419 2 185 174516	10 TO 10 TO 16	110 - 9 (8.) 0- 6	5 4 3 2 1 0
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	exposed.	Very little water in channel and mostly present as standing pools.
	SCORE	20 -19 18 17 (16	15 1 12 11	10 9 8 7 6	55-4:3-12 3 12 01

### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat		Condition	1 Category	-
	Parameter	Optimal	Suboptimal	Marginal	Poor
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	SCORE	20 19 18 17 16	15 14 7 13 12 11	10 9 8 7 6	5 4 3 2 1 0
mpling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length I to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length I to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
la Sal	SCORE	20元19、185-17616.	115 - 14 - 13 - 12 - 11	10 9 ., 8 7 . 7 6	(5) 4 3 2 1 0
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
to be ev	score (LB)	Left Bank 10 (9). Right Bank 10 (9)	8 7 .6 8 7 6	5 4 3	2 1 0
Parameters	9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
	SCORE $\cancel{D}$ (LB) SCORE $\cancel{D}$ (RB)	Left Bank ( 10 9 9 ) Right Bank ( 10 9 9 )	<b>B. P. S.</b> 6	12-5 12-4 2 3 13	2
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
	SCORE $Q$ (LB) SCORE $Q$ (RB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<u>L</u>	SCORE LIZ (KB)	Right Bank (10) 9	8 7 6	5 4 3	2 1 0

Total Score 122

STREAM NAME Anor	iona Rives	LOCATION	nighair	y Boy	TPSD-T	T3202
STATION #TT32-02RI	VERMILE	STREAM CLA	ASS	1 //		
LATLO	NG	RIVER BASIN				
STORET#		AGENCY				
INVESTIGATORS O	voill late	ATT. HO	skin's			
FORM COMPLETED BY		DATE 6/2	201		FOR SURVEY	1
Kobonts		TIME	SO AM PM	7 7	rical 5	andlera
						1 /
WEATHER	Now		Past 24	Has there b	een a heavy rain	in the last 7 days?
CONDITIONS	☐ storm	(heavy rain)	hours Q		rature 90°F	6)17/01
-		steady rain) s (intermittent)	٥		rature	
	%O %c!	loud cover	<u>.</u> %	Other		
<u> </u>		ar/sunny	<u>*</u>			
SITE LOCATION/MAP	Draw a map of the sit	e and indicate t	he areas samp	pled (or attac	h a photograph)	
	1	14				
	$1 \sim 1$	who	ì			
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CTDEAM	Street Section			Street T	'ne / /	
STREAM CHARACTERIZATION	Stream Subsystem O Perennial	termittent DT	idal	Stream Ty  Coldwai	rer Warmwa	ıter
	Stream Origin			Catchmen	t Area	km²
	☐ Glacial ☐ Non-glacial montar	e O Mixtur	fed e of origins			
	☐ Swamp and bog	Other_				

		1				
WATERS FEATUR		U Fore	i/Pasture 🗇 Industri cultural 🔾 Other	ercial ial	docal Watershed NPS No evidence Som Obvious sources Local Watershed Eros	ne potential sources
		<b></b>			None O Moderate	☐ Heavy
RIPARIA VEGETA (18 meter	TION buffer)	Indicate the dominant type and record the dominant species present Grasses Herbaceous dominant species present areas Clacked Panicum 30?				
INSTREA FEATUR			ited Reach Length	m	3	ly shaded O Shaded O De-
	-2	Samnii	ng Reach Area	ا المعد	High Water Mark	
	,	Ħ			Proportion of Reach F	Represented by Stream
	•	ß	km <sup>1</sup> (m <sup>2</sup> x1000)	12.81	Norphology Lypes □ Riffle %	□ Run%
•		Estima	ted Stream Depth <u>Q.4</u>	<u>- (21:</u> 0	Pool 100 %	CA . Janes
		Surfac (at tha	e Velocity  weg)  UU  S  S  S  S  S  S  S  S  S  S  S  S	India	Channelized Yes	
LARGE V DEBRIS	VOODY	Density of LWD = 512 (LWD/Teach area) Leaf Lifer Shirt KS			Her 1 Sticks Fmuds Twas VS	
AQUATION VEGETA		Indicat M Root O Float	e the dominant type and ed emergent	record the do ooted submerge ttached Algae	ominant species present	□ Free floating
	<del></del>	domin: Portion	int species present 6	tic vegetation	pusestite	2 Collected
WATER	QUALITY	Tempe	rature75.84		Water Odors	
		11	c Conductance 436.	00	Normal/None C Sew.	age I Chemical I Other
		Dissolv	ed Oxygen		Water Surface Oils	
		рН	+130			Globs D Flecks
		Turbid	·		Turbidity (if not meass	ured)
		WQ Instrument Used YSL			□ Clear □ Slightly tu □ Opaque □ Stained	rbid Turbid Other
SUBSTRATE D		Odors O Normal O Sewage O Petroleum O Chemical O Cher		Deposits ☐ Sludge ☐ Sawdust ☐ Relict shells	☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand	
	Oils AAbsent Slight Moders			te 🔾 Profu	are the undersides blace	h are not deeply embedded, k in color?
	RGANIC SUB: (should a	STRATE dd up to 1	COMPONENTS 100%)		ORGANIC SUBSTRATE C (does not necessarily add	OMPONENTS up to 100%)
Substrate Type	Diamet	er	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
n , ,						<del></del>

INC	ORGANIC SUBSTRATE (should add up to	COMPONENTS 100%)		ORGANIC SUBSTRATE ( does not necessarily add	
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant	
Boulder	> 256 mm (10*)	Q	1	materials (CPOM)	160
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic	1.4.
Gravel	2-64 mm (0.1"-2.5")	0	1	(FPOM)	140
Sand	0.06-2mm (gritty)	40	Mari	grey, shell fragments	1
Silt	0.004-0.06 mm	100	1		
Clay	< 0.004 mm (slick)	7)	1		



### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME A DELIGIOUS KIN	NU LOCATION IPSD-TT3202
STATION # 173202 RIVERMILE	STREAM CLASS
LATLONG	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS COLORS	Neilly, Husking (earlier)
FORM COMPLETED BY	DATE 6/2001 REASON FOR SURVEY TIME 2:00: AM PM Triad Sanding

	Habitat	Condition Category					
	Parameter	Optimal	Suboptimal	Marginal	Poor		
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.		
		to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient).	form of newfall, but not yet prepared for colonization (may rate at high end of scale).	and a second second second second second second second second second second second second second second second			
each	SCORE	.2014 1941 8 Jan 12 1961	<b>京為原理問題</b>	409228 CANAGE			
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.		
	SCORE	20.49.518.617.816	STATE OF LIFE	20 9 3.4.7 261	J59 4743¥ 2 7 Jan 0*		
	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.		
nete	SCORE	202019 181 101 16	2000年6月32日2日	10 5 9 8 75 6	-5 <b>42</b> 22 <b>(0)</b> + 0		
Paran	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools		
	8	sediment deposition.	deposition in pools.	deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	almost absent due to substantial sediment deposition.		
	SCORE	20 319 318 178		eig 2 festiment	F 5444 EDE 241 30		
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	exposed.	A		
	SCORE	20 19 18 19 16	15 12 13 12 11 11 11 11 11 11 11 11 11 11 11 11	-100.00m. \$12.5-3.9	3 5 5 F 4 1 5 6 2 1 5 IN D		



#### HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

	Habitat	Condition Category					
	Parameter	Optimal	Suboptimal	Marginal	Poor		
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.		
	SCORE	20 19 18 275 16	SISTEM POR STATE	10 9 48 27 6	3 4 3 2 T 0		
Parameters to be evaluated broader than sampling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length I to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length I to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.		
	SCORE	<del></del>	KASAMINATE BAILS AFTER	10-9-8-146	(5) 4 - 3 · 2 · 1 · 02		
	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30- 60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas, "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional sears.		
	SCORE () (LB) Len Bank (107.0) SCORE () (RB) Right Haple (107.0)				ELLEGAL COL		
	9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.		
	SCORE [] (LB) SCORE [] (RB)	Line 1/2 (10.35) Replaced 1/2 (10.35)		And refer to the Charles of the Land	* 2 + - 1		
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.		
	SCORE $\frac{\cancel{0}}{\cancel{0}}$ (LB) SCORE $\frac{\cancel{0}}{\cancel{0}}$ (RB)	Left Bank 10 9	8 4 7 × 6 ×	5 4 3	2 1 0 0 c		

Total Score 123

STREAM NAME Aber	LOCATION	IPS	D-WWC	6		
STATION # WWO6 RI	STREAM CLASS			]		
LATLC	NG	RIVER BASIN				]
STORET #		AGENCY				
INVESTIGATORS RO	oerts, O'Ne		śi <u>u</u>			
FORM COMPLETED BY	DATE 6/2 TIME 853	H CM PM	REASON FOR SURV	Sampling		
WEATHER CONDITIONS/	Now	· · · · · · · · · · · · · · · · · · ·	Past 24 hours		rain in the last 7 days? Storm 1051 nigh	1/2/
highthy		(heavy rain) steady rain)	<b>1</b> 2	Air Temperature 70		6/17/01
018 0000	- 🗆 showers	s (intermittent)	<u> </u>	Other	·	
C COUD COUD		loud cover ear/sunny		T-storms		
SITE LOCATION/MAP	Draw a map of the sit	e and indicate th		led (or attach a photogr	aph)	1
					A-North	
	, 1	and the second s			Stake	mi
	7000	2 2 2 2 2 2 2	ه ا		L'hain Chann River	3
					<	
STREAM CHARACTERIZATION	Stream Subsystem  Perennial Stream Origin Glacial Non-glacial montan Swamp and bog	□ Spring-f	fed	Stream Type Coldwater  A fe d West Catchment Area	mwater () km²	

WATERSHED FEATURES		☐ Field	Pasture Industr	ercial ial PR Trac	Local Watershed NPS  No evidence A Som Obvious sources C  Local Watershed Eros None Moderate	e potential sources Wextraction system		
RIPARIA VEGETA (18 meter	TION	Indicate the dominant type and record the dominant species present AHerbaceous  Grasses  dominant species present redmark, Arranwood, Sinsilve ferv, lo						
INSTREAM FEATURES		Estimated Reach Length  Estimated Stream Width  Sampling Reach Area  Area in km² (m²x1000) km²  Estimated Stream Depth  Surface Velocity (at thalweg)  NO FLOW			High Water Mark Proportion of Reach R Morphology Types	Parily open Partly shaded Shaded  High Water Mark Proportion of Reach Represented by Stream Morphology Types  Orifice % Run %  Channelized Yes No		
LARGE V DEBRIS	WOODY	LWDm 1090 Density of LWDm1/km2 (LWD/ reach area)						
AQUATIO VEGETA		Indicate the dominant type and record the dominant species present  © Rooted emergent  © Rooted submergent  © Rooted floating  © Free floating  dominant species present  Slas. (V) purfl 1008 (2) . (K) Ludwig (2)  Portion of the reach with aquatic vegetation						
WATER	QUALITY	Temperature 20.8% C Specific Conductance 177.0 M/HOS Dissolved Oxygen 3.74 ppm pH 7.50 Turbidity 2.4 NTW WQ Instrument Used 151 610M			Water Surface Oils Slick Sheen ONOne Other	Normal/None   Sewage   Petroleum   Chemical   Fishy   Other		
	SEDIMENT/ SUBSTRATE		Odors  A Normal   Sewage   Petroleum   Sludge   Sawdust   Paper fiber   Sand   Relict shells   Other   Dod    Chemical   Anaerobic   None   Relict shells   Other   Dod    Looking at stones which are not deeply embedded,					
		Oils DAbse	nt 🗆 Slight 🗆 Modera	ate 🔾 Profu	are the undersides blackse	ck in color?		
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)				ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)				
Substrate Type	Diamete	er	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Bedrock Boulder	> 256 mm (10")		9	Detritus	sticks, wood, coarse plant materials (CPOM)	30%		
Cobble Gravel	, , , , , , , , , , , , , , , , , , , ,		Ö	Muck-Mud	black, very fine organic (FPOM)	70%		
Sand	Sand 0.06-2mm (gritty		0.	Marl	grey, shell fragments			
Silt Clay	0.004-0.06 mm	nk)	10090			070		
Clay	< 0.004 mm (slid	ck) <b>  ( )</b>		1	1	1 / /		

STREAM NAME A NOTIONA WIT	LOCATION IPSO-WWO6
STATION # WWO 6 RTVERMILE	STREAM CLASS
LATLONG	RIVER BASIN
STORET#	AGENCY
INVESTIGATORS Reports O'N	ell Rosin Hoskins
FORM COMPLETED BY	DATE 611101 REASON FOR SURVEY

	Habitat	Condition Category					
	Parameter	Optimal	Suboptimal	Marginal	Poor		
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization poiential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking		
ach	SCORE	20 - 19-2 18-2 17-8 16s	北京 14 40 人口。	10.52 82.7 6	5 4 3 2 1 0		
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock no root mat or vegetation.		
uated	SCORE	20 19 18 17 16	15 14 13 12 11	10 .9 8 - 75 6	5 4 3 2 1 0		
s to be evale	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.		
nete	SCORE	20 19 18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<b>2)5*414</b> **118***12*11F	10-1-90:782 45-6	(5)4-352-11-(		
Param	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; posalmost absent due to substantial sediment deposition.		
	SCORE	20.2 19 .18 172016	SUSTAINED POPUL	110'-91-8-20-26	(5) (4) 3 E 2 3 L 1 4 1		
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	exposed.	4		
	SCORE	20 19 18 (17) 16	15 14 13 12 11	10 9, 8, 7 6	5 4 3 2 V		

All Snaile pool No flow. adae PFO

	Habitat	Condition Category						
1	Parameter	Optimal	Suboptimal	Marginal	Poor			
	6. Channel Alteration			Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.			
- {	SCORE	20 195118, 175.16.	A15年4年第12年111年	10 91 8 7 6	5 4 3 2 1 0			
ing reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length I to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.			
Samp	SCORE	(20, )19±18 17±16	15 14 13 17 HIL	10 2 95 8 7 - 6	5 4 3 2 1 0			
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.			
to be eval	SCORE (LB) SCORE (RB)	Left Bank 15 (10): 96 Right Hank 17 (10): 92		1.5 943.73	# 2 P F   1 E 0 F			
Parameters to	9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	potential plant stubble height remaining.		Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.			
	SCORE $(0)$ (LB) SCORE $(0)$ (RB)	Left Bank Ale Store			\$2000000000000000000000000000000000000			
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12: 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.			
	SCORE $(LB)$ SCORE $(LB)$	Left Bank 10 . 9 Right Bank 10 9		5 4 3	2 1 0			

Total Score 128

Nochan

## PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME A CO.	ava RIVET	LOCATION IPSD-TT1802
STATION# 1802 RIV		STREAM CLASS
LATLO	NG	RIVER BASIN
STORET #	0	AGENCY
INVESTIGATORS (	Jail Hosk,	his kaberis
FORM COMPLETED BY	· · · · · · · · · · · · · · · · ·	DATE 6 2 0 AM (PM) REASON FOR SURVEY
Roberts		Triad Sampling
WEATHER CONDITIONS	Now	Past 24 Has there been a heavy rain in the last 7 days?  hours Yes No 6/17 heavy rain.
COMPITIONS		(heavy rain)
-	shower	s (intermittent) Q Other
		ear/surny X T-storm yesterday 70m
SITE LOCATION/MAP	Draw a man of the si	te and indicate the areas sampled (or attach a photograph)
SHE LOCATION/MAP	oran a map or out it	$\sim$ $\perp$
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CTDEAM	Street Subrustan	Stream Type \/
STREAM CHARACTERIZATION	Stream Subsystem Perennial	
	Stream Origin	Catchment Areakm²
	☐ Non-glacial monta ☐ Swamp and bog	Spring-fed  A Mixture of origins  A Other
l l	1	

# PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATER FEATUR		☐ Fore ☐ Fiel ☐ Agr	d/Pasture ☐ Indust icultural ☐ Other	riab R	Local Watershed NPS No evidence Sor Obvious sources Local Watershed Ero None Moderate	ne potential sources			
RIPARIA VEGETA (18 meter	ATION	Indica O Tree domin	Indicate the dominant type and record the dominant species present Afferbaceous  Offices  Offices  dominant species present 45500k Sedae 1005e5vok						
INSTRE FEATUR		Estima Sampl Area i Estima	ated Stream Width 2 ing Reach Area 65 n km² (m²x1000) ited Stream Depth 1 e Velocity	km²  [ttm	High Water Mark Water level	Represented by Stream  Ren	, wlet nt to chann		
LARGE DEBRIS	WOODY	LWD Densit	y of LWD	m²/km² (LWD/	09				
AQUATI VEGETA		Indicate the dominant type and record the dominant species present   Rooted emergent   Rooted submergent   Rooted floating   Free floating     Floating Algae   Attached Algae   dominant species present   Cooted at borders were work.					2		
WATER	QUALITY	Tempe Specifi Dissolv pH	rature 22.11°C c Conductance 356 red Oxygen 4.92 f. 55 ity 5.0 1.57 c stryment Used 75	1.0905/	Water Odors Normal/None © Sew Petroleum Fishy Water Surface Oils	Globs Flecks			
SEDIME! SUBSTRA		Odors O Norm O Chen O Othe Oils O Abse	nical Anaerobic	Petroleum None	Looking at stones which	Paper fiber Sand Other ADW Sand The are not deeply embedded, ick in color?			
INC	INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)  ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)								
Substrate Type	Diamete	r	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area			
Bedrock Boulder	> 256 mm (10")		3	Detritus	sticks, wood, coarse plant materials (CPOM)	20			
Cobble Gravel	64-256 mm (2.5° 2-64 mm (0.1"-2		8	Muck-Mud	black, very fine organic (FPOM)	80			
Sand Silt	0.06-2mm (gritty 0.004-0.06 mm	•)	10090	Mari	grey, shell fragments	0			
Clay	< 0.004 mm (slic	k)	0/	i		$\cup$			

STREAM NAME Agerians liver	LOCATION TPSD-TT1802
STATION # 18-02 RIVERMILE	STREAM CLASS
LAT LONG	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts HOSK	NS
FORM COMPLETED BY	TIME Z:30 AM CM Triad Sanpling
L PULL	

$\neg$	Habitat		Condition	Category	
	Parameter	Optimal	Suboptima!	Marginal	Poor
- 1	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	SCORE	2001000018161746164	COMMISSION OF THE PROPERTY OF	11017-932-862-748-60	Colores at 2 minutes 0.
	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
ated	SCORE	2019 :: 18 - 17 - 16	STATE DE LOS LOS LIVES	110 9 E 8 4 E (6)	\$55-45-3U-2-17-0
s to be evalu	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.
neter	SCORE		Jacob and the later of the	\$10 9 2 8 3 3 6 B	(A) 4505-25 AT 0
Parame	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	almost absent due to substantial sediment deposition.
	SCORE	2016 9 L 184, 1880	STREET, SHIPS IN		15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	exposed.	channel and mostly present as standing pools
	SCORE	20 19 18 17 16	1659142.13 F12-11	10×2944 8×4-8-4 6	\$ 15 Sept - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1

$\Box$	Habitat	Condition Category						
	Parameter	Optimal	Suboptimal	Marginal	Poor			
	6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.			
	score (	20) 19 -18 17 - 16	<b>河支加</b> 和3042、11:	10 9 8 47 6	35 453 271 0			
pling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - charnel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.			
n sam	SCORE	2034194-18-1746	教を大きない	10-9-18-12-46-	5 4 3 2 1 0			
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.			
to be eva	$\begin{array}{c} \text{SCORE} \stackrel{\frown}{D} \text{(LB)} \\ \text{SCORE} \stackrel{\frown}{D} \text{(RB)} \end{array}$							
Parameters	9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.			
	SCORE $D(LB)$ SCORE $D(RB)$	ROD BALL TO	Programme Company (CDF)					
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.			
	SCORE $\cancel{\bigcup}$ (LB) SCORE $\cancel{\bigcup}$ (RB)	Left Bank (10) 9 Right Bank (10) 9	6 8 7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	5 4 3	2 1 0			

Total Score 150

## PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Ab	erionia Rvir	LOCATION I	PSD:	- TT1002
STATION # SD10-01 R		STREAM CLAS	S	
LAT L	ONG	RIVER BASIN		
STORET#		AGENCY		
INVESTIGATORS 2	objects 0'IVU	Wy Hosk	NS	
FORM COMPLETED BY	,	DATE 6/22/ TIME 8:45	0 / _ (M) PM	REASON FOR SURVEY Triad Survey
WEATHER CONDITIONS	☐ rain (: ☐ showers ☐○%☐ %cl	(heavy rain) steady rain) (intermittent) oud cover ar/sunny	hours	Has there been a heavy rain in the last 7 days?  No Part Temperature 66° C  Other
SITE LOCATION/MAP	Draw a map of the site	e and indicate the	areas sample	ed (or attach a photograph)
	<b>^</b>		Blod	
	Access Sale	m H.	R. H.	rfil
STREAM CHARACTERIZATION	Stream Subsystem A Perennial Inte Stream Origin Glacial Non-glacial montane Swamp and bog	rmittent 🗆 Tidal  Spring-fed  Mixture of	origins	Stream Type Coldwater Warmwater Catchment Areakm²

### PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERS FEATURE		Predom  Forest  Field/I  Agricu	Pasture 🔲 Industria	rcial	Local Watershed NPS Pollution No evidence Some potential sources O Obvious sources			
		Reside			Local Watershed Erosic Wone O Moderate	On G Heavy		
RIPARIA VEGETA (18 meter	TION		Indicate the dominant type and record the dominant species present AHerbaccous  Grasses  dominant species present willow purple loosestrife, cattail					
INSTREA FEATURE		Estimate Samplin Area in Estimate		Start  St	High Water Mark  Water Conference  Proportion of Reach Re Morphology Types	r shaded O Shaded O O O O  Think of the presented by Stream  Run%  No%  NoNo		
LARGE W DEBRIS	VOODY	LWD Density	of LWDm	0 9 1 <sup>2</sup> /km² (LW <b>D</b> / 1	P Preach area)			
AQUATIC VEGETA		□ Roote □ Floati domina	ng Algae □ At	ooted submerge tached Algae	nt A Rooted floating	OFree floating		
WATER	QUALITY	Specific Dissolve pH Turbidi	ity <u>6.0 p</u> .7 (4. strument Used <u>YSI</u>	-	☐ Fishy ☐ Water Surface Oils	Chemical Other Globs Flecks		
SEDIMEN SUBSTRA		Odors Norm Chem Other Oils	al Sewage lical Anaerobic Sight State	Petroleum None None	Deposits  O Sludge Relict shells  Looking at stones which	Other Sand		
					ORGANIC SUBSTRATE C (does not necessarily add			
Substrate Diameter % Composition in Sampling Reach			Camarita - Danie	Substrate Type	Characteristic	% Composition in Sampling Area		
Bedrock Boulder	> 256 mm (10")		8	Detritus	sticks, wood, coarse plant materials (CPOM)	80		
Cobble	64-256 mm (2.5		0	Muck-Mud	black, very fine organic	2		
Gravel	2-64 mm (0.1"-2	!.5 <b>"</b> )			(FPOM)	20 0%		
Sand	0.06-2mm (gritt	y)		Marl	grey, shell fragments			
Silt	0.004-0.06 mm		10090	1		1 0%		
Clay	< 0.004 mm (sli	ck)	0/*	<u></u>	<u> </u>	10		

STREAM NAME A GOLIONA LIVE	LOCATION TTIOOD Salon street
STATION #TTIO O 2 RIVERMILE	STREAM CLASS
LATLONG	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS ROSENTA OINLA	eill tok ins
FORM COMPLETED BY	DATE 6/12/01 REASON FOR SURVEY TIME 9/10 AM PM

	Habitat		Condition	Category	
	Parameter	Optimal	Suboptimal	Marginal	Роог
	1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
cach	SCORE	20,711900187028416	<b>在2000年</b> 13.712.711年	\$10_x19++-8 <i>Z62-6</i> -6-1	Moderate Light, O.
Parameters to be evaluated in sampling reach	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
luate	SCORE	20 - 19 - 18 - 1716 .	15414 - 13 - 12 11	10 9 8 7 6	5-4-3-2-150
ers to be eva	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.
met	SCORE	20 19, 18, 17 16	海流 135.12 (1)	10 9 8 7 6	13 4 3 2 2 E 0
Paran	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected, sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	SCORE	20 19 18 17 16	\$57014 C13 12 (71)	410 69 85 17 V6	(58-)1-3-2-17-0
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	SCORE	20 19 18 (17 16	F15 914% 13 12 11	-10-9 8 -7 -6	5 4 3 2 1 0

Station in 1992 too

NONO Heradi

$\neg$	Habitat	Condition Category					
	Parameter	Optimal	Suboptimal	Marginal	Poor		
	6. Channel Alteration	Channelization or dredging absent or minimal, stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.		
	SCORE	20 19 18 17 16	15 14 7 13 32 12 11	10 = 9 - 8 - 5 7 - 6	5 4 73 2 1 0		
pling reach	7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.		
sam	SCORE	20 19 18 17 16	15 - 14 13 - 12 - 21 14	10-9-8-7-6	5 4 3 2 1 0		
Parameters to be evaluated broader than sampling reach	8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.		
to be evalu	SCORE $\frac{10}{10}$ (LB) SCORE $\frac{1}{10}$ (RB)	Left Bank 10 9.			162 64 1 2 0 2 1 2 1 1 2 0 2		
Parameters	9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.		surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.		
	SCORE (LB) SCORE (RB)	Left Bank 10 9		PRINCE ALIMANNE.	2-1-1 0 		
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12 18 meters; human activities have impacted zone only minimally.	- Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.		
	SCORE (LB) SCORE (RB)	Left Bank 10 9 Right Bank 10 9			2 1 2 0		

Total Score 128

### PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME A SON	ona Kiver	LOCATION T	PSD-TTI	301	
STATION # 5013-01 RN		STREAM CLASS			_]
LAT LON	NG	RIVER BASIN			
STORET#		AGENCY			
INVESTIGATORS マン	certs, o'Me		ک سن		
FORM COMPLETED BY		DATE 6/22/01	REASON FOR	survey d sampling	
WEATHER CONDITIONS	rain ( showers	Past hour long (heavy rain) continued (steady rain) continued cover long rain) continued cover long rain l	Has there been a S Yes No Air Temperature Other	heavy rain in the last 7 days? 6/17 heavy 270 F 6/20 T-5	rain terms
SITE LOCATION/MAP	Draw a map of the sit	te and indicate the area	s sampled (or attach a pl	hotograph)	
	Foresia) touts	No. of the state o	5-010-1730!	Swall some is	
STREAM CHARACTERIZATION	Stream Subsystem Perennial   Initial I	☐ Spring-fed	Catchment Are	Warmwater  akm²	

### TI301

### PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

							_
WATERS FEATUR		Predon O Fores O Field O Agric	Pasture 📮 Industri	rcial	Local Watershed NPS No evidence O Som Obvious sources	Pollution e potential sources	
		□ Resid	ential	7	Local Watershed Eros None		
RIPARIA VEGETA	N TION	Indicate Di Trees	the dominant type and	record the do	ominant species present	erbaceous	
(18 meter		domina	nt species present	tite val	< Allowwood of	der bern 100sesti	fe je ned werd
INSTREA FEATUR			ed Reach Length		Canopy Cover	ly shaded 🗆 Shaded 🔗 🕶	
		Estima	ed Stream Width	<u>5/-m</u>		y snaucu d Snaucu	Ī ,
İ	_)	Sampli	ig Reach Area 6_	— <del>™ (1</del> ,	High Water Mark	epresented by Stream	high water
		Area in	km² (m¹x1000)	km²	Morphology Types		1-akonsn
<u> </u>		Estimat	ed Stream Depth 0.3	<u>~</u> ₽.4.	O Pool 7/7%	) Run%	
		Surface (at that	Velocity	/sec	Channelized 🔾 Yes	×Νο	
		(21 1112)	res rent on	s traw	Dam Present Q Yes	No	
LARGE V	VOODY	LWD		90			
DEBRIS		Density	orLWD	<sup>2</sup> /km² (LWD/	reach बारवा)		
AQUATIO		Indicat	the dominant type and	record the do	ominant species present		]
VEGETA	HON		ng Algae	ooted submerge ttached Algae	No voge to hi	Free floating	:
		domina	nt species present			aly	
		Portion	of the reach with aquat	ic vegetation	<u> </u>	02/00	F.5
WATER	QUALITY	Temper	ature 11.36°C		Water Odors		
		Specific	Conductance 225.	. 00		1 Chemical	
		Dissolv	ed Oxygen <u>4.10</u>		-	Other	
		рН 🔀	<del></del> -		Water Surface Oils ☐ Slick ☐ Sheen ☐ M None ☐ Other	Globs 🖸 Flecks	j
		Turbid	4.3 NTU	<del></del>	Turbidity (if not meas	urad)	
		W812	trument Used XS-	<u></u>	☐ Clear ☐ Slightly to ☐ Opaque ☐ Stained	irbid	
SEDIMEN SUBSTRA		Odors M Norm	al Sewage	☐ Petroleum	Deposits	Paper fiber Q Sand	
		Chem	iical 🖸 Anaerobic	O None	Deposits  Sludge Sawdust Relict shells	Other Wash	
1		Oils ≤	he Slight		are the undersides bla	ch are not deeply embedded, ck in color?	
<u> </u>		U Abser	t U Slight U Modera	te 🔾 Profu	se OYes ONO	<u>  A</u>	]
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)					ORGANIC SUBSTRATE ( (does not necessarily add		
Substrate Type	Diamet	:r	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Bedrock			O	Detritus	sticks, wood, coarse plant	2.	
Boulder	> 256 mm (10")		0		materials (CPOM)	4.0	
Cobble	64-256 mm (2.5	"-10")	0	Muck-Mud	black, very fine organic	60	
Gravel	2-64 mm (0.1"-2	2.5")	0		(FPOM)	80	
Sand	0.06-2mm (gritt	y}	[2	Marl	grey, shell fragments		1
Silt	0.004-0.06 mm		10090	]			
Clay	< 0.004 mm (sli	ck)	0 10				
							=

STREAM NAME A berjana River	LOCATION IPSO-TTI301
STATION # 50 13-01 RIVERMILE	STREAM CLASS
LATLONG	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS LUBERTS, HIS SC	is o'Nell
FORM COMPLETED BY	TIME 10:55 AM PM TO I GO

Г	Т	Habitat	Condition Category					
		Parameter	Optimal	Suboptimal	Marginal	Poor		
		1. Epinauman	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at	10 3070 111111 03 0	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.		
.	reach	SCORE	not transient).	high end of scale).	570/A914182479468	Sugar at \$42\$ July 0		
	be evaluated in sampling re	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.		
	ra te	SCORE	200141914181611714166	AND AND AND AND AND AND AND AND AND AND	(40).9 = 8 th Thing 6	\$58.4 \$3098.2 \$\display 14 0k.		
ı	2	3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large- deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent.		
1	e e	SCORE		ASSAULTER 12 POLE	10 9 8 02 6	(3) 4 (3) (2) (3)		
	Parameter	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.		
1		SCORE	2022194618416		110.20 ST. 188.10			
		5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.		
		SCORE		X 5 14 14 12 3 2 7 12 - 7 1 1	到2797 47 46、全日	16895分别的表现		

Party, party, party, party, and saple but saple banks

Very 1.400 Close

genelined Arrayanin

orea / ninght's toxes

Alteration	Optimal Channelization or dredging absent or minimal, stream with normal pattern.	Suboptimal  Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Marginal Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Poor  Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Alteration	dredging absent or minimal; stream with normal pattern.	present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach	or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed
SCORE	20 19 5-18 17 16			
		AS) PRESENTE	70 94 8 7 6	*5564789862(FE 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 (19 (18) 120 16	CO SHELL MANUFACTURE	110- 9-1-81-74¢36	<b>45.</b> 4 . 3 . 2 . 4 . 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional sears.
score (LB)	31,000 200 400 100 100 100 100 100 100 100 100 1			MANAGE AND A
9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	surfaces covered by native vegetation, but one class of plants is not well- represented; disruption evident but not affecting full plant growth potential to any great extent; more	surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE $\frac{Q}{L}$ (LB) SCORE $\frac{L}{L}$ (RB)	Left Bank Res E. W. C. B.			
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12- 18 meters; human activities have impacted zone only minimally.	- Width of riparian zone 6- 12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE $\frac{9}{4}$ (LB)	Left Bank 10(9)		\$ 6 4 3 S	112 112, 03
	8. Bank Stability (score each bank)  SCORE (LB)  9. Vegetative Protection (score each bank)  Note: determine left or right side by facing downstream.  SCORE (LB)  SCORE (RB)  10. Riparian Vegetative Zone Width (score each bank riparian zone)	considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)  20 12 12 15 16  8. Bank Stability (score each bank)  Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.  SCORE (LB)  SCORE (RB)  More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.  SCORE (RB)  10. Riparian Vegetative Zone Width (score each bank riparian zone)  Width of riparian zone  > 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.  Left Bank 100 9	considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)  20:212:212:216:216:216:216:216:216:216:216	considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.  20-12-12-16-15-16-15-16-15-16-15-16-15-16-15-16-15-16-15-16-15-16-15-16-15-16-15-16-15-16-15-16-15-16-16-16-16-16-16-16-16-16-16-16-16-16-

Total Score 104

RB NHO

RBad clearing 12 made gorbage